

ELECTRICAL AND MECHANICAL TESTING OF WIRE INSULATION FOR SPACE APPLICATIONS

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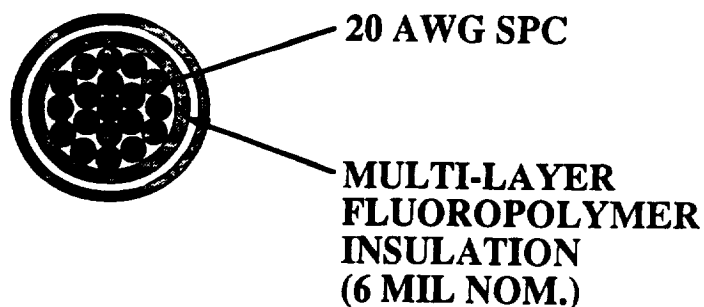
N94- 28710

BACKGROUND

- **PURPOSE**
- **HYBRID SAMPLES**
- **TESTING**

TEST PROGRAM

M81381/7 VS. GORE HSCR™



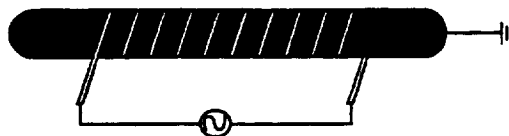
TESTS PERFORMED

- **CORONA INCEPTION & EXTINCTION**
- **TIME/CURRENT TO SMOKE**
- **WIRE FUSING TIME**
- **ABRASION**
- **FLEX LIFE**
- **DYNAMIC CUT THROUGH**

CORONA INCEPTION & EXTINCTION VOLTAGES

-TEST PARAMETERS-

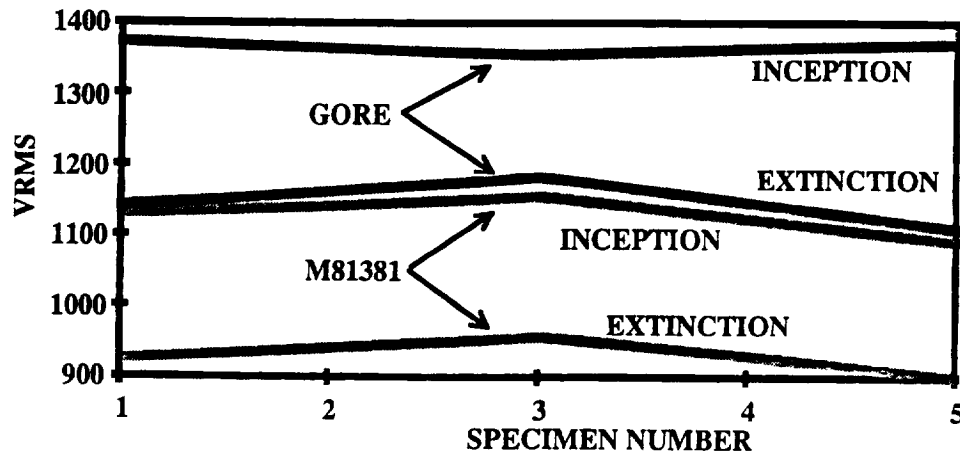
- **10X MANDREL, 10 TURNS**
- **400 HZ POWER SUPPLY**
- **50 VOLTS/SECOND**
- **SEA LEVEL, 60,000 FEET**



CORONA INCEPTION & EXTINCTION VOLTAGES

-TEST RESULTS-

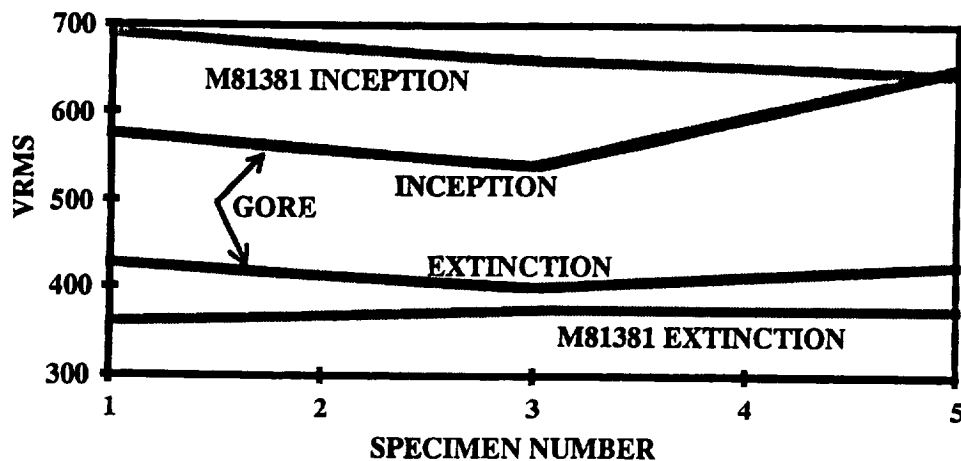
SEA LEVEL



CORONA INCEPTION & EXTINCTION VOLTAGES

-TEST RESULTS-

ALTITUDE



TIME/CURRENT TO SMOKE

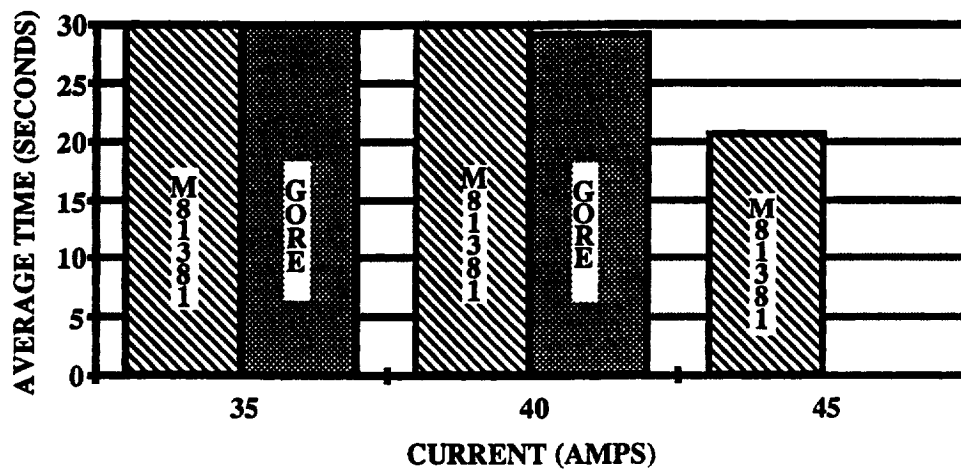
-TEST PARAMETERS-

- SPECIMEN SUSPENDED HORIZONTALLY
- CONSTANT CURRENT DC POWER
- 5 AMP INCREMENTS
- 30 SECONDS AT AMPERAGE



TIME/CURRENT TO SMOKE

-TEST RESULTS-



WIRE FUSING TIME

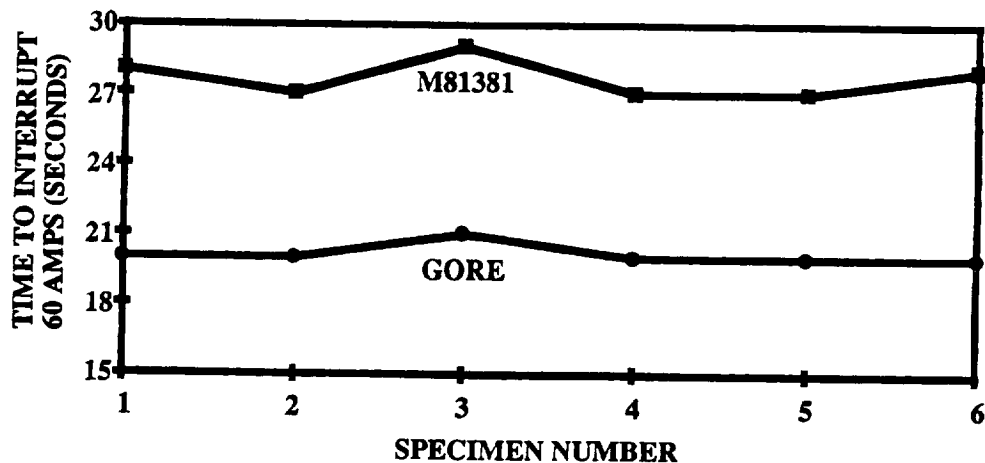
-TEST PARAMETERS-

- SPECIMEN SUSPENDED HORIZONTALLY
- CONSTANT CURRENT DC POWER
- 2.5 X RATED CURRENT (60 A)



WIRE FUSING TIME

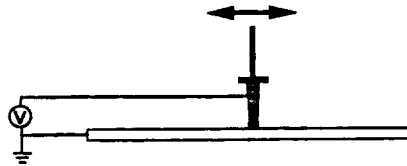
-TEST RESULTS-



ABRASION

-TEST PARAMETERS-

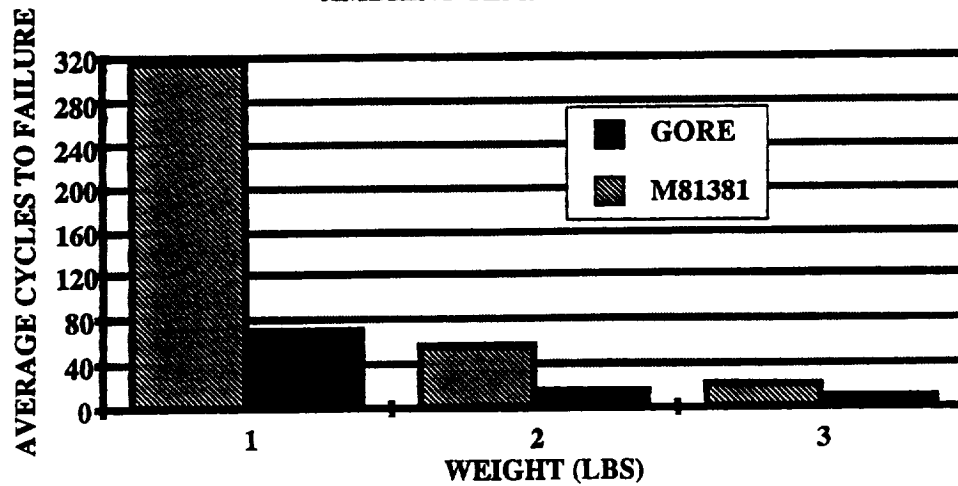
- .020 INCH ROD
- 1 INCH PATH, 60 CYCLES PER MINUTE
- 1, 2, & 3 LB. WEIGHT
- AMBIENT & 150°C



ABRASION

-TEST RESULTS-

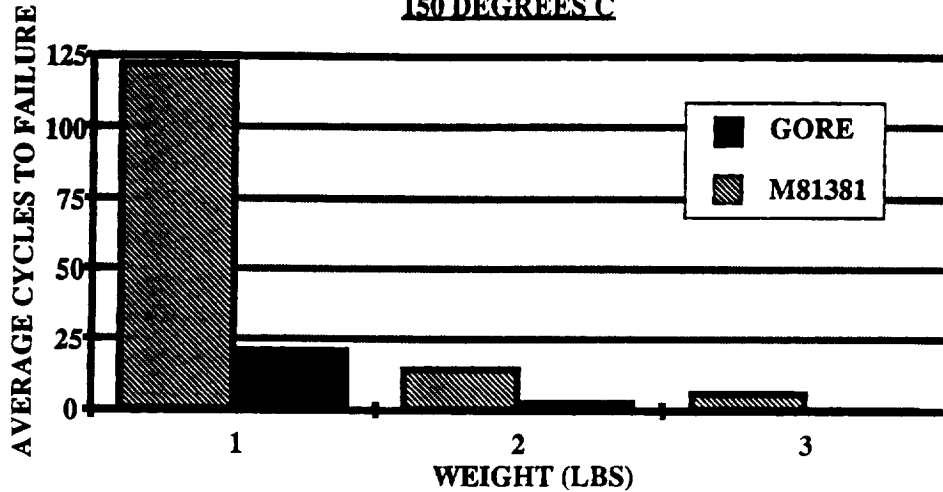
AMBIENT TEMPERATURE



ABRASION

-TEST RESULTS-

150 DEGREES C



FLEX LIFE

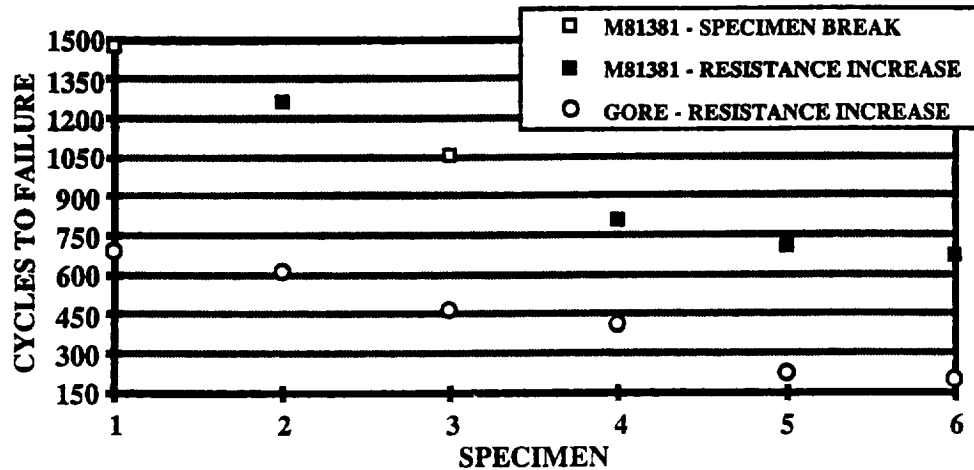
-TEST PARAMETERS-

- 90° FLEX IN EACH DIRECTION
- 30 CYCLES PER MINUTE
- 6X MANDRELS
- 7 LB. WEIGHT



FLEX LIFE

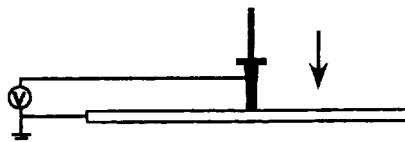
-TEST RESULTS-



DYNAMIC CUT-THRU

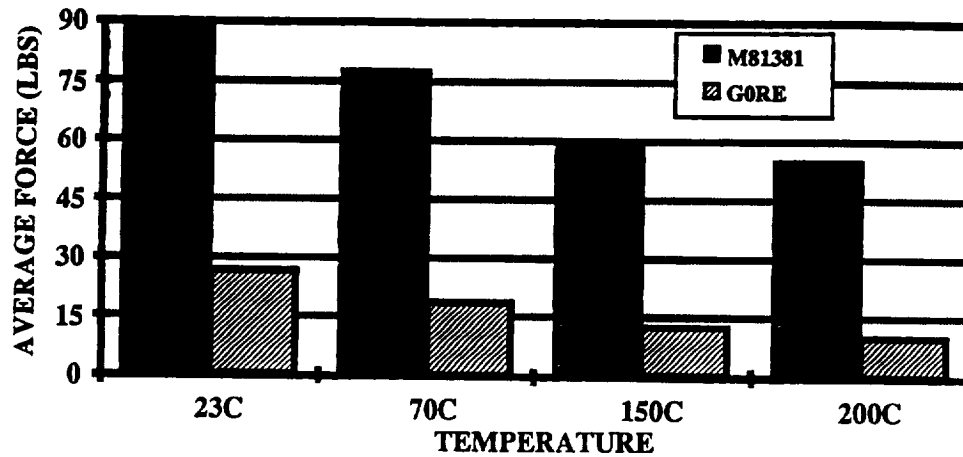
-TEST PARAMETERS-

- .020 INCH ROD
- 600 LB. LOAD CELL
- 0.2 INCH/MINUTE
- 23°C, 70°C, 150°C, & 200°C



DYNAMIC CUT-THRU

-TEST RESULTS-



CONCLUSIONS

- GORE NOT COMPARABLE TO M81381 IN PERFORMANCE AT ELEVATED TEMPERATURES
- MECHANICAL PROPERTIES FAIR BUT M81381 SUPERIOR
- CORONA, WIRE FUSING TIME EQUIVALENT

